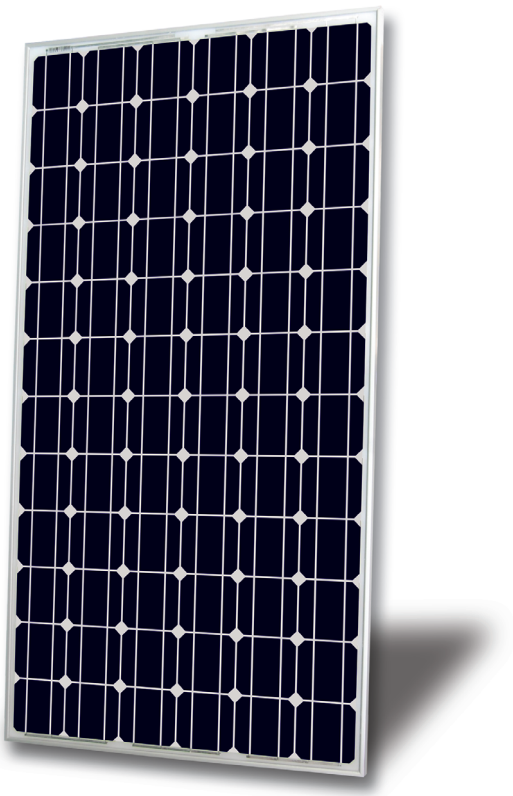
ECSOLAR

ECS-180/185/190/195/200/205D
Mono-crystalline PV Module



Features

- High conversion efficiency through advanced manufacturing technology
- Excellent performance under weak light conditions (mornings, evenings and cloudy days)
- Withstand snow loads up to 5400 Pa and wind loads up to 2400 Pa under extreme temperature
- 10 years product warranty and 25 years performance warranty ensure reliability of modules
- Easy installation

Certificates

- Manufactured according to International Quality Management System Standard: ISO 9001
- Certified and approved by CE, TUV, IEC 61215,IEC 61730, MCS and CEC

Clean Energy Council

Website:
www.ecsolar.com

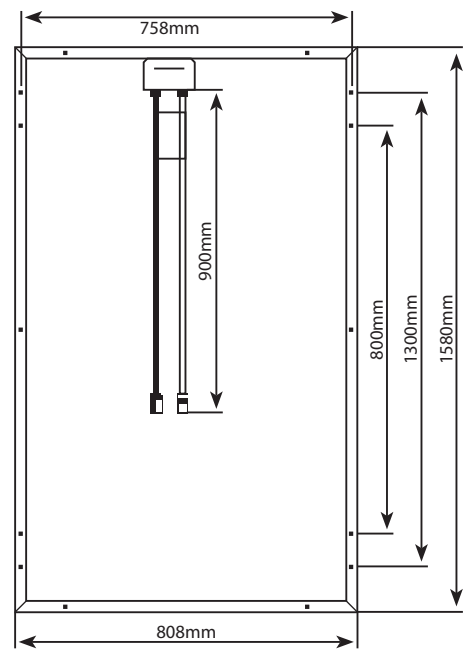
ECSOLAR (Wuxi Saijing Solar Co., Ltd)
Industrial Park C, Guanlin town, Yixing city, Jiangsu Province, P. R. China
Tel: +86 25 8659 2702 Fax: +86 25 8659 2703 E-mail: sales@ecsolar.com

Electrical Characteristics under STC*

Module Type	ECS-180D	ECS-185D	ECS-190D	ECS-195D	ECS-200D	ECS-205D
Maximum Power-Pmax (Wp)	180	185	190	195	200	205
Voltage at Maximum Power-Vmp (V)	36.5	36.7	36.8	36.9	37.1	37.3
Current at Maximum Power -Imp (A)	4.93	5.04	5.16	5.29	5.39	5.5
Open Circuit Voltage-Voc (V)	44.3	44.5	44.6	44.7	44.8	44.9
Short Circuit Current-Isc (A)	5.36	5.47	5.59	5.72	5.83	5.96
Module Efficiency-η_m (%)	14.1	14.5	14.9	15.2	15.6	16
Power Tolerance (%)	0/+3	0/+3	0/+3	0/+3	0/+3	0/+3

Mechanical Characteristics

Cell Type	Mono-crystalline 125×125 mm (5 inches)
Number of Cells	72 (6×12)
Dimension	1580×808×35mm (62.20×31.81×1.38 inches)
Weight	15.5 kg
Front Glass	Low Iron Tempered Glass
Encapsulant	EVA
Frame	Anodized Aluminum Alloy



Temperature Characteristics

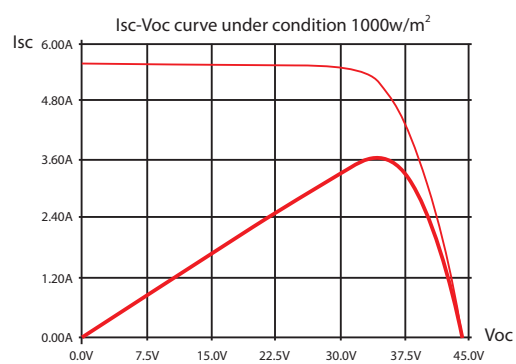
NOCT*	45±2°C
Temperature Coefficient of Pmax	-0.50%/°C
Temperature Coefficient of Voc	-0.35%/°C
Temperature Coefficient of Isc	0.060%/°C

Maximum System Ratings

Operating Temperature	-40°C to +80°C
Maximum System Voltage	1000V DC
Maximum Series Fuse Rating	10A

Warranty

10 years product warranty
10 years warranty on 90% power output
25 years warranty on 80% power output



*STC (Standard Testing Conditions): Irradiance 1000 W/m^2, cell temperature 25 °C, AM=1.5

*NOCT (Nominal Operating Cell Temperature): Irradiance 800 W/m^2, ambient temperature 20 °C, wind speed 1 m/s

The specifications in this datasheet are subjected to change without prior notice

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Limited Warranty Statement for ECSOLAR PV Modules

（valid from 07.01.2011）

1. Limited Product Warranty– Ten Years Repair, Replacement or Refund Remedy

Wuxi Saijing Solar Energy Co., Ltd. (ECSOLAR) warrants its Photovoltaic Solar Modules (MODULES), including factory-assembled DC connectors and cables, if any, to be free from defect in materials and workmanship which would impact the functionality of the product under normal application, installation, use and service conditions. The duration of this limited warranty is one hundred and twenty (120) months from the date of delivery in the original packing to the first customer (CUSTOMER) of the ECSOLAR products.

Claims under the warranty can only be accepted if the buyer can provide the proof that the malfunctioning or non-conformity of MODULES results exclusively from defects in materials and/or workmanship under normal application, installation, use and service conditions. If MODULES fail to conform to this warranty, ECSOLAR will, at its option, either repair or replace the product, or refund a reasonable, pro-rated portion of the purchase price.

The repair or replacement or refund remedy shall be the sole and exclusive remedy provided under the "Limited Product Warranty" and shall not extend beyond the one hundred and twenty (120) months period set forth herein. This "Limited Product Warranty" does not warrant a specific power output, which shall be exclusively covered under clause 2 hereinafter ("Limited Performance Warranty").

2. Limited Performance Warranty

A. 10 years

If, within a period of ten (10) years from the date of delivery in the original packing to the CUSTOMER, any MODULE(s) under normal application, installation, use and service conditions exhibits a power output less than 90 % of the minimum "Peak Power at STC" as specified in ECSOLAR's Product Data Sheet, provided that such loss in power is determined by ECSOLAR (at its sole and absolute discretion) to be due exclusively to defects in materials or workmanship, ECSOLAR will compensate for such loss in power by either providing to the buyer additional MODULE(s) to make up the total wattage loss, at a cost pro-rated for the time in service of the faulty MODULE(s), or by repairing or replacing the faulty MODULE(s), at the option of ECSOLAR.

B. 25 years

If, within a period of twenty-five (25) years from the date of delivery in the original packing to the CUSTOMER, any MODULE(s) under normal application, installation, use and service conditions exhibits a power output less than 80 % of the minimum "Peak Power at STC" as specified in ECSOLAR's Product Data Sheet, provided that such loss in power is determined by ECSOLAR (at its sole and absolute discretion) to be due exclusively to defects in materials or workmanship, ECSOLAR will compensate for such loss in power by either providing to the buyer additional MODULE(s) to make up the total wattage loss, at a cost pro-rated for the time in service of the faulty MODULE(s), or by repairing or replacing the faulty MODULE(s), at the option of ECSOLAR.

The remedies set forth in this clause 2 shall be the sole and exclusive remedies provided under the "Limited Performance Warranty".

3. Exclusions and Limitations

Warranty claims must be received within the applicable warranty period for this warranty to be effective.

Both the "Limited Product Warranty" and the "Limited Performance Warranty" do not apply to any MODULE(s) which have been subjected to:

1) Misuse, abuse, neglect or accident;

2) Alteration, improper installation or application;

3) Improper repair or modifications;

4) Power failure surges, lightning, flood, fire, accidental breakage or other events outside ECSOLAR' s control.

Both the "Limited Product Warranty" and the "Limited Performance Warranty" do not cover any transportation costs for return of the MODULE(s) or for reshipment of any repaired or replaced MODULE(s) or cost associated with installation, removal or reinstallation of the MODULE(s).

Warranty claims will not be honored if the type or serial number of the MODULES have been altered, removed or made illegible.

4. Contacts

Any correspondence with ECSOLAR is to be conducted via the following ways:

Address: Industrial Park C, Guanlin town, Yixing city,Jiangsu province, China

Tel: +86 510 81739806

Fax: +86 510 87296222

Email: support@ecsolar.com

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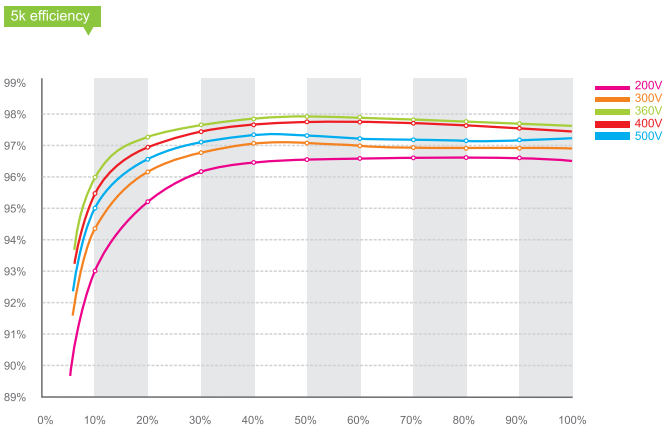
Sungold 1500TL / 2000TL / 3000TL / 5000TL

Leading - edge Technology

- Maximum efficiency of 97.8% and wide input voltage range
- Transformerless GT topology
- Compact design
- MTL - String
- Bluetooth technology
- Sound control
- Easy installation
- Comprehensive Growatt warranty program



GROWATT NEW ENERGY CO., LTD

A: No. 12 Building, Xicheng Industrial Zone, Bao'an District, Shenzhen, P. R.China

T : + 86 755 2747 1900 F : + 86 755 2749 1460 E : service@ginverter.com

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Datasheet

	Sungold 1500TL	Sungold 2000TL	Sungold 3000TL	Sungold 5000TL
Input Data				
Max. DC power	1800W	2300W	3150W	5000W
Max. DC voltage	450V	500V	500V	580V
Full load Mpp-Voltage range	175V - 430V	195V - 450V	250V - 450V	250V - 500V
PV voltage range MPPT	120V - 450V	120V - 450V	120V - 450V	120V - 500V
Max. number of parallel strings	1	2	2	3
Number of MPP trackers	1	1	1	1
Max. input current	10A	12A	15A	20A
Output (AC)				
Nominal AC output power	1650W	2000W	2850W	4600W
Max. AC power	1650W	2200W	3000W	4600W
Max. output current	8A	9.7A	15A	22.3A
Nominal AC voltage range	207Vac - 263Vac	207Vac - 263Vac	207Vac - 263Vac	207Vac - 263Vac
AC grid frequency range	46Hz - 54Hz	46Hz - 54Hz	46Hz - 54Hz	46Hz - 54Hz
Phase shift	1	1	1	1
THDI	<3%	<3%	<3%	<3%
AC connection	Single phase	Single phase	Single phase	Single phase
Efficiency				
Max.efficiency	97%	97%	97%	97.8%
Euro-eta	96%	96%	96.5%	97.4%
MPPT efficiency	99.5%	99.5%	99.5%	99.5%
Protection Devices				
DC reverse polarity protection	yes	yes	yes	yes
AC short-circuit protection	yes	yes	yes	yes
Ground fault monitoring	yes	yes	yes	yes
Grid monitoring	yes	yes	yes	yes
Integrated all-pole sensitive leakage current monitoring unit	yes	yes	yes	yes
General Data				
Dimensions (W / H / D) in mm	362/329/132	362/329/132	362/329/132	406/406/192
Weight	11.5KG	11.7KG	12.2KG	21KG
Operating temperature range	-25 °C ... +60 °C	-25 °C ... +60 °C	-25 °C ... +60 °C	-25 °C ... +60 °C
Noise emission (typical)	≤25 dB(A)	≤25 dB(A)	≤25 dB(A)	≤25 dB(A)
Consumption: operating (standby)/ night	< 5W / < 0.5 W	< 5W / < 0.5 W	< 5W / < 0.5 W	< 5W / < 0.5 W
Topology	transformerless	transformerless	transformerless	transformerless
Cooling concept	No fan	No fan	No fan	No fan
Installation: Indoors / Outdoors (IP65)	yes / yes	yes / yes	yes / yes	yes / yes
Altitude	Up to 2000m without power derating	Up to 2000m without power derating	Up to 2000m without power derating	Up to 2000m without power derating
Humidity	0 ~ 95%, no condensation	0 ~ 95%, no condensation	0 ~ 95%, no condensation	0 ~ 95%, no condensation
Features				
DC connection:(MC3/MC4/H4)	opt /opt / yes	opt / opt / yes	opt / opt / yes	opt / opt / yes
AC connection: Terminals	yes	yes	yes	yes
LCD display	yes	yes	yes	yes
Interfaces: Bluetooth/RS485/RS232	opt / yes / yes	opt / yes / yes	opt / yes / yes	opt / yes / yes
Warranty: 5 years / 10 years	yes / opt	yes / opt	yes / opt	yes / opt
Certificates and Approvals				
	AS4777, SNZ,AS,NZS 3100			

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Growatt Factory Warranty

Applies solely to the following products:

Growatt1500, Growatt2000, Growatt3000, Growatt4400, Growatt5000, Sungold1500, Sungold2000, Sungold3000, Sungold5000, Growatt3600MTL, Growatt4200MTL, Growatt5000MTL, Growatt10000UE, Growatt12000UE, Growatt17000UE.

The legal guaranty obligation of the seller of your device is not affected by this warranty and remains fully valid for 24 months from the date of delivery.

For the above named products, you receive a Growatt factory warranty valid for **5** years from the date of purchase.

This warranty includes all defects of design, components and manufacturing.

Excluded from warranty are damages due to:

• Brea □□□□